AMENDMENTS TO THE CLAIMS

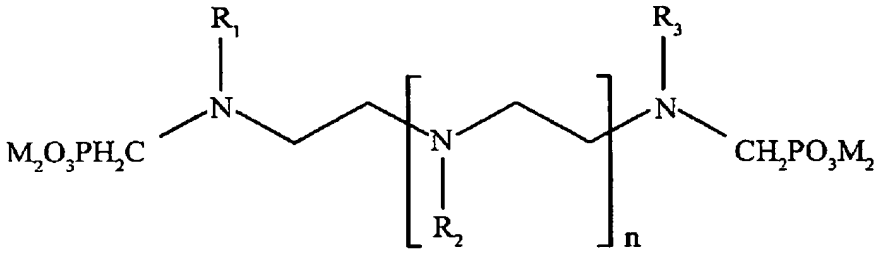
This listing will replace all prior versions and listings of claims, in the application.

Listing of Claims:

What is claimed is:

1. (canceled)

2. (currently amended) A scale inhibitor comprising at least one polymethylenephosphate derivative having the following formula:



wherein n is ~~a number~~an integer comprised between 2 and 15000,

wherein M is a hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.

3. (previously presented) The scale inhibitor according to claim 2, wherein at least one of the $CH_2PO_3M_2$ moieties in a terminal position on the molecule is replaced by a moiety selected from the group consisting of CH_2R_4, $(CH_2)_mSO_3M$, and $CH_2CH_2R_5$.

4. (previously presented) The scale inhibitor of claim 2, wherein the polyaminomethylenephosphonate derivative is produced by a process of phosphonomethylation of polyamine derivatives employing the Mannich reaction.

5. (canceled)

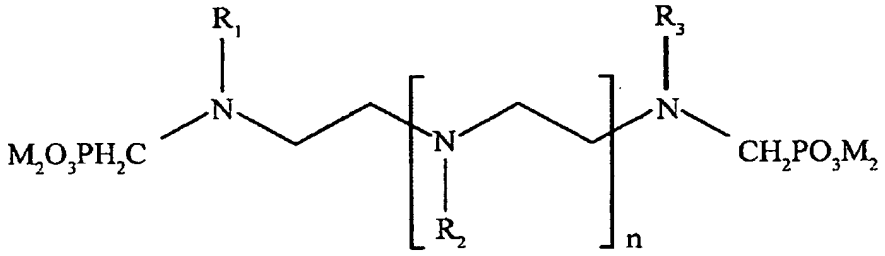
6. (canceled)

7. (canceled)

8. (canceled)

9. (currently amended): The precipitation inhibitor according to claim 2, wherein ~~the cation~~M is an alkali metal or ammonium.

10. (currently amended): A method for inhibiting scale formation in water, the method comprising the step of adding to the water a scale inhibitor comprising at least one polymethylenephosphonate derivative having the following formula:



wherein n is ~~a number~~an integer comprised between 2 and 15000,

wherein M is hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

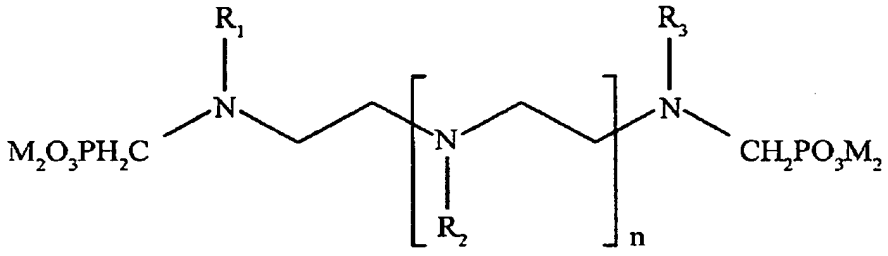
$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is a an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.

11. (previously presented): The method according to claim 10, further comprising the step of precipitating the polymethylenephosphonate derivative on a metal surface in contact with the water, thereby preventing corrosion of the metal surface.

12. (currently amended): A method for sequestering iron ions in a water system, the method comprising the step of providing the water in the water system with a scale inhibitor comprising at least one polymethylenephosphonate derivative having the following formula:



wherein n is ~~a number~~an integer comprised between 2 and 15000,

wherein M is hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.